

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v301)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 40 feet. Their combined area, found by adding the square's area and the rectangle's area, is 624 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 40x = 624$$

To complete the square, add  $\left(\frac{40}{2}\right)^2 = 400$  to both sides.

$$x^2 + 40x + 400 = 1024$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 20)^2 = 1024$$

Undo the squaring.

$$x + 20 = \pm\sqrt{1024}$$

$$x + 20 = \pm 32$$

Subtract 20 from both sides.

$$x = -20 \pm 32$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 12$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 60 feet. The total area, of the square and rectangle, is 700 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 1400 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 44 feet. The total area, of the square and rectangle, is 812 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v302)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 30 feet. Their combined area, found by adding the square's area and the rectangle's area, is 400 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 30x = 400$$

To complete the square, add  $\left(\frac{30}{2}\right)^2 = 225$  to both sides.

$$x^2 + 30x + 225 = 625$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 15)^2 = 625$$

Undo the squaring.

$$x + 15 = \pm\sqrt{625}$$

$$x + 15 = \pm 25$$

Subtract 15 from both sides.

$$x = -15 \pm 25$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 10$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 60 feet. The total area, of the square and rectangle, is 864 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 28 feet. The total area, of the square and rectangle, is 533 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 24 feet. The total area, of the square and rectangle, is 297 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v303)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 28 feet. Their combined area, found by adding the square's area and the rectangle's area, is 380 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 28x = 380$$

To complete the square, add  $\left(\frac{28}{2}\right)^2 = 196$  to both sides.

$$x^2 + 28x + 196 = 576$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 14)^2 = 576$$

Undo the squaring.

$$x + 14 = \pm\sqrt{576}$$

$$x + 14 = \pm 24$$

Subtract 14 from both sides.

$$x = -14 \pm 24$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 10$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 46 feet. The total area, of the square and rectangle, is 1407 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 60 feet. The total area, of the square and rectangle, is 1036 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 52 feet. The total area, of the square and rectangle, is 1824 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v304)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 56 feet. Their combined area, found by adding the square's area and the rectangle's area, is 1425 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 56x = 1425$$

To complete the square, add  $\left(\frac{56}{2}\right)^2 = 784$  to both sides.

$$x^2 + 56x + 784 = 2209$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 28)^2 = 2209$$

Undo the squaring.

$$x + 28 = \pm\sqrt{2209}$$

$$x + 28 = \pm 47$$

Subtract 28 from both sides.

$$x = -28 \pm 47$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 19$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 30 feet. The total area, of the square and rectangle, is 504 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 48 feet. The total area, of the square and rectangle, is 868 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 38 feet. The total area, of the square and rectangle, is 315 square feet. What is the value of  $x$ ?



Name: \_\_\_\_\_

## at1117paper: Complete the Square (v305)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 48 feet. Their combined area, found by adding the square's area and the rectangle's area, is 945 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 48x = 945$$

To complete the square, add  $\left(\frac{48}{2}\right)^2 = 576$  to both sides.

$$x^2 + 48x + 576 = 1521$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 24)^2 = 1521$$

Undo the squaring.

$$x + 24 = \pm\sqrt{1521}$$

$$x + 24 = \pm 39$$

Subtract 24 from both sides.

$$x = -24 \pm 39$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 15$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 531 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 46 feet. The total area, of the square and rectangle, is 1235 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 42 feet. The total area, of the square and rectangle, is 343 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v306)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 48 feet. Their combined area, found by adding the square's area and the rectangle's area, is 868 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 48x = 868$$

To complete the square, add  $\left(\frac{48}{2}\right)^2 = 576$  to both sides.

$$x^2 + 48x + 576 = 1444$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 24)^2 = 1444$$

Undo the squaring.

$$x + 24 = \pm\sqrt{1444}$$

$$x + 24 = \pm 38$$

Subtract 24 from both sides.

$$x = -24 \pm 38$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 14$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 48 feet. The total area, of the square and rectangle, is 720 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 56 feet. The total area, of the square and rectangle, is 980 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 36 feet. The total area, of the square and rectangle, is 700 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v307)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 28 feet. Their combined area, found by adding the square's area and the rectangle's area, is 333 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 28x = 333$$

To complete the square, add  $\left(\frac{28}{2}\right)^2 = 196$  to both sides.

$$x^2 + 28x + 196 = 529$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 14)^2 = 529$$

Undo the squaring.

$$x + 14 = \pm\sqrt{529}$$

$$x + 14 = \pm 23$$

Subtract 14 from both sides.

$$x = -14 \pm 23$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 9$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 60 feet. The total area, of the square and rectangle, is 2349 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 44 feet. The total area, of the square and rectangle, is 885 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 744 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v308)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. Their combined area, found by adding the square's area and the rectangle's area, is 1400 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 50x = 1400$$

To complete the square, add  $\left(\frac{50}{2}\right)^2 = 625$  to both sides.

$$x^2 + 50x + 625 = 2025$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 25)^2 = 2025$$

Undo the squaring.

$$x + 25 = \pm\sqrt{2025}$$

$$x + 25 = \pm 45$$

Subtract 25 from both sides.

$$x = -25 \pm 45$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 20$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 671 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 54 feet. The total area, of the square and rectangle, is 1387 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 38 feet. The total area, of the square and rectangle, is 663 square feet. What is the value of  $x$ ?



Name: \_\_\_\_\_

## at1117paper: Complete the Square (v309)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 54 feet. Their combined area, found by adding the square's area and the rectangle's area, is 1771 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 54x = 1771$$

To complete the square, add  $\left(\frac{54}{2}\right)^2 = 729$  to both sides.

$$x^2 + 54x + 729 = 2500$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 27)^2 = 2500$$

Undo the squaring.

$$x + 27 = \pm\sqrt{2500}$$

$$x + 27 = \pm 50$$

Subtract 27 from both sides.

$$x = -27 \pm 50$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 23$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 52 feet. The total area, of the square and rectangle, is 1628 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 1139 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 600 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v310)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 32 feet. Their combined area, found by adding the square's area and the rectangle's area, is 320 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 32x = 320$$

To complete the square, add  $\left(\frac{32}{2}\right)^2 = 256$  to both sides.

$$x^2 + 32x + 256 = 576$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 16)^2 = 576$$

Undo the squaring.

$$x + 16 = \pm\sqrt{576}$$

$$x + 16 = \pm 24$$

Subtract 16 from both sides.

$$x = -16 \pm 24$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 8$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 1139 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 36 feet. The total area, of the square and rectangle, is 301 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 24 feet. The total area, of the square and rectangle, is 385 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v311)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 52 feet. Their combined area, found by adding the square's area and the rectangle's area, is 1173 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 52x = 1173$$

To complete the square, add  $\left(\frac{52}{2}\right)^2 = 676$  to both sides.

$$x^2 + 52x + 676 = 1849$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 26)^2 = 1849$$

Undo the squaring.

$$x + 26 = \pm\sqrt{1849}$$

$$x + 26 = \pm 43$$

Subtract 26 from both sides.

$$x = -26 \pm 43$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 17$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 60 feet. The total area, of the square and rectangle, is 2236 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 52 feet. The total area, of the square and rectangle, is 768 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 975 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v312)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 60 feet. Their combined area, found by adding the square's area and the rectangle's area, is 1309 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 60x = 1309$$

To complete the square, add  $\left(\frac{60}{2}\right)^2 = 900$  to both sides.

$$x^2 + 60x + 900 = 2209$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 30)^2 = 2209$$

Undo the squaring.

$$x + 30 = \pm\sqrt{2209}$$

$$x + 30 = \pm 47$$

Subtract 30 from both sides.

$$x = -30 \pm 47$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 17$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 26 feet. The total area, of the square and rectangle, is 315 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 36 feet. The total area, of the square and rectangle, is 405 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 40 feet. The total area, of the square and rectangle, is 384 square feet. What is the value of  $x$ ?



Name: \_\_\_\_\_

## at1117paper: Complete the Square (v313)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 54 feet. Their combined area, found by adding the square's area and the rectangle's area, is 1120 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 54x = 1120$$

To complete the square, add  $\left(\frac{54}{2}\right)^2 = 729$  to both sides.

$$x^2 + 54x + 729 = 1849$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 27)^2 = 1849$$

Undo the squaring.

$$x + 27 = \pm\sqrt{1849}$$

$$x + 27 = \pm 43$$

Subtract 27 from both sides.

$$x = -27 \pm 43$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 16$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 54 feet. The total area, of the square and rectangle, is 1672 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 56 feet. The total area, of the square and rectangle, is 372 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 744 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v314)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 42 feet. Their combined area, found by adding the square's area and the rectangle's area, is 520 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 42x = 520$$

To complete the square, add  $\left(\frac{42}{2}\right)^2 = 441$  to both sides.

$$x^2 + 42x + 441 = 961$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 21)^2 = 961$$

Undo the squaring.

$$x + 21 = \pm\sqrt{961}$$

$$x + 21 = \pm 31$$

Subtract 21 from both sides.

$$x = -21 \pm 31$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 10$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 464 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 24 feet. The total area, of the square and rectangle, is 217 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 54 feet. The total area, of the square and rectangle, is 1207 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v315)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 56 feet. Their combined area, found by adding the square's area and the rectangle's area, is 2025 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 56x = 2025$$

To complete the square, add  $\left(\frac{56}{2}\right)^2 = 784$  to both sides.

$$x^2 + 56x + 784 = 2809$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 28)^2 = 2809$$

Undo the squaring.

$$x + 28 = \pm\sqrt{2809}$$

$$x + 28 = \pm 53$$

Subtract 28 from both sides.

$$x = -28 \pm 53$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 25$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 38 feet. The total area, of the square and rectangle, is 368 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 54 feet. The total area, of the square and rectangle, is 715 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 36 feet. The total area, of the square and rectangle, is 405 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v316)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 48 feet. Their combined area, found by adding the square's area and the rectangle's area, is 1273 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 48x = 1273$$

To complete the square, add  $\left(\frac{48}{2}\right)^2 = 576$  to both sides.

$$x^2 + 48x + 576 = 1849$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 24)^2 = 1849$$

Undo the squaring.

$$x + 24 = \pm\sqrt{1849}$$

$$x + 24 = \pm 43$$

Subtract 24 from both sides.

$$x = -24 \pm 43$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 19$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 58 feet. The total area, of the square and rectangle, is 840 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 56 feet. The total area, of the square and rectangle, is 1152 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 60 feet. The total area, of the square and rectangle, is 2236 square feet. What is the value of  $x$ ?



Name: \_\_\_\_\_

## at1117paper: Complete the Square (v317)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 56 feet. Their combined area, found by adding the square's area and the rectangle's area, is 2241 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 56x = 2241$$

To complete the square, add  $\left(\frac{56}{2}\right)^2 = 784$  to both sides.

$$x^2 + 56x + 784 = 3025$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 28)^2 = 3025$$

Undo the squaring.

$$x + 28 = \pm\sqrt{3025}$$

$$x + 28 = \pm 55$$

Subtract 28 from both sides.

$$x = -28 \pm 55$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 27$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 22 feet. The total area, of the square and rectangle, is 240 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 60 feet. The total area, of the square and rectangle, is 781 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 18 feet. The total area, of the square and rectangle, is 175 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v318)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 36 feet. Their combined area, found by adding the square's area and the rectangle's area, is 405 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 36x = 405$$

To complete the square, add  $\left(\frac{36}{2}\right)^2 = 324$  to both sides.

$$x^2 + 36x + 324 = 729$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 18)^2 = 729$$

Undo the squaring.

$$x + 18 = \pm\sqrt{729}$$

$$x + 18 = \pm 27$$

Subtract 18 from both sides.

$$x = -18 \pm 27$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 9$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 30 feet. The total area, of the square and rectangle, is 559 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 34 feet. The total area, of the square and rectangle, is 552 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 56 feet. The total area, of the square and rectangle, is 2241 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v319)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. Their combined area, found by adding the square's area and the rectangle's area, is 600 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 50x = 600$$

To complete the square, add  $\left(\frac{50}{2}\right)^2 = 625$  to both sides.

$$x^2 + 50x + 625 = 1225$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 25)^2 = 1225$$

Undo the squaring.

$$x + 25 = \pm\sqrt{1225}$$

$$x + 25 = \pm 35$$

Subtract 25 from both sides.

$$x = -25 \pm 35$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 10$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 50 feet. The total area, of the square and rectangle, is 1491 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 34 feet. The total area, of the square and rectangle, is 552 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 48 feet. The total area, of the square and rectangle, is 793 square feet. What is the value of  $x$ ?

Name: \_\_\_\_\_

## at1117paper: Complete the Square (v320)

### Example

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 38 feet. Their combined area, found by adding the square's area and the rectangle's area, is 423 square feet. What is the value of  $x$ ?

### Example's Solution

$$x^2 + 38x = 423$$

To complete the square, add  $\left(\frac{38}{2}\right)^2 = 361$  to both sides.

$$x^2 + 38x + 361 = 784$$

Recognize the left side is now a perfect-square trinomial. Factor the left side.

$$(x + 19)^2 = 784$$

Undo the squaring.

$$x + 19 = \pm\sqrt{784}$$

$$x + 19 = \pm 28$$

Subtract 19 from both sides.

$$x = -19 \pm 28$$

In this geometric example, we are only concerned about the positive solution. So,

$$x = 9$$

### Question 1

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 54 feet. The total area, of the square and rectangle, is 1575 square feet. What is the value of  $x$ ?

**Question 2**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 52 feet. The total area, of the square and rectangle, is 1725 square feet. What is the value of  $x$ ?

**Question 3**

A square's edge length is  $x$  feet. A rectangle has a height of  $x$  feet and a width of 34 feet. The total area, of the square and rectangle, is 672 square feet. What is the value of  $x$ ?